Jamaica, W. I., climatological data, July, 1897.

	Morant Point Lighthouse.	Negril Point Lighthouse.	Kingston.	Kings House.	Castleton Gardens.	Hope Gardens.	Stony Hill Reformatory.	Hill Gardens (Cin. Plant.)
Latitude	17°56′	18° 16′	17° 58′	.....	18° 12′	.....	.....	18°05′
Longitude	76°10′	78° 23′	76° 48′	.....	76° 50′	.....	.....	76°39′
Elevation (feet)	8	33	50	400	580	600	1,400	4,907
Mean barometer 7 a. m.	29.955	29.959	29.965	.....	.....	.....	.....	25.248
Mean barometer 3 p. m.	29.923	29.927	29.918	.....	.....	.....	.....	25.192
Mean temperature 7 a. m.	.....	78.9	77.5	73.7	73.0	.....	73.3	63.0
Mean temperature 3 p. m.	.....	83.4	86.2	86.8	83.1	.....	80.1	67.4
Mean of maximum	.....	87.2	89.1	91.2	86.6	.....	85.9	71.5
Mean of minimum	.....	72.6	73.5	66.8	67.8	.....	65.9	59.3
Highest maximum	.....	90	92	96	91	.....	90	75
Lowest minimum	.....	70	71	63	60	.....	65	56
Mean dew-point 7 a. m.	.....	72.7	69.4	70.7	69.6	.....	69.8	57.8
Mean dew-point 3 p. m.	.....	74.7	72.5	77.9	75.8	.....	74.2	62.1
Mean relative humidity 7 a. m.	.....	82	77	96	85	.....	89	83
Mean relative humidity 3 p. m.	.....	75	65	74	77	.....	82	84
Monthly rainfall (inches)	3.07	9.00	1.74	2.80	5.95	2.89	4.11	2.02
Average daily wind movement	.....	217.2	94.6	.....	.....	.....	.....	17.9
Average wind direction 7 a. m.	ne.	n.e.	n.	.....	.....	.....	.....	.....
Average wind direction 3 p. m.	ne.	e.	se.	.....	.....	.....	.....	.....
Average hourly velocity 7 a. m.	5.0	6.5	1.0	.....	.....	.....	.....	.....
Average hourly velocity 3 p. m.	7.0	10.4	7.3	.....	.....	.....	.....	.....
Average cloudiness (tenths):								
7 a. m. Lower clouds	2.5	0.2	1.0	.....	.....	.....	.....	.....
7 a. m. Middle clouds	2.5	0.8	0.6	.....	.....	.....	.....	.....
7 a. m. Upper clouds	1.2	5.4	3.2	.....	.....	.....	.....	....
3 p. m. Lower clouds	2.8	4.2	2.6	.....	.....	.....	.....	.....
3 p. m. Middle clouds	1.8	3.9	1.3	.....	.....	.....	.....	.....
3 p. m. Upper clouds	1.4	0.8	3.6	.....	.....	.....	.....	.....

For the summit of Blue Mountain at an elevation of 7,423 feet, the rainfall for July is 5.15.

In a note on the "Jamaica Weather Report for the month of June, 1897," Mr. J. F. Brennan shows that on the average for the whole island the rainfall for the current year has been as follows:

Months.	Normal.	1897.	Excess.	Accumulated excess.
	Inches	*Inches.*	*Inches.*	*Inches.*
January	4.09	0.32	— 3.27	— 3.27
February	2.64	0.69	— 1.95	— 5.22
March	3.01	1.82	— 1.19	— 6.41
April	4.61	7.52	+ 2.91	— 3.50
May	9.57	11.57	+ 2.00	— 1.50
June	8.21	5.23	— 2.98	— 4.48

EARTHQUAKE-PROOF BUILDINGS.

The great anxiety felt by those who live in countries subject to earthquakes has stimulated the application of our knowledge of seismology to the construction of buildings that shall be approximately proof against injury from earthquakes. The idea that it was possible to do this was defended by the English engineer, Mallet, who published a work on the dynamics of earthquakes in 1846, and whose views became especially popular after his elaborate report on the Neapolitan earthquake of 1857. He showed that the destruction of brick or stone buildings depended upon the way in which the elastic wave of compression issued from the crust of the earth, or rather upon the way in which the base of the building moved, while its top, by reason of its inertia, resisted motion. Of course the strain broke the building in its weakest joints, usually those of poor mortar, but often the weaker stones. From the cracks in the building, Mallet attempted to determine the nature of the shock and the origin of the earthquake, which he generally located between 3 and 10 miles below the earth's surface. Mallet established certain principles according to which buildings may be constructed, so that they shall be able to resist any shock that is likely to visit them, and his views have been applied to the construction of lighthouses, customhouses, and other important buildings. But since those days American engineers have devised a new style of building that was entirely unthought of in Europe twenty years ago, so that we now have four principal types of tall buildings that can withstand the ordinary shocks of earthquakes, viz:

1. Buildings of wooden or bamboo framework, where the parts are so bound together that the whole can sway to and fro like the masts of a vessel at sea.

2. Most solid masonry walls, whose bases are much broader than their summits, the walls and joints having a slope such that the emerging blow of the earthquake shock is likely to strike the joints at a safe angle.

3. Those in which the walls merely support their own weight, while the floors rest independently on their own columns of brick or, still better, of iron.

4. The so-called steel balloon frame, of steel columns and beams and girders, whose panels are filled in like a wall of brick or stone and whose floors are of brick and cement. The steel beams and columns are bound together as firmly as is the wooden framework in class No. 1, and the whole sways to and fro like an elastic mass.

THUNDERSTORMS IN FRANKLINVILLE, N. Y.

The Editor has received from Dr. John W. Kales, voluntary observer at Franklinville, Cattaraugus Co., in western New York, the following description of the remarkably numerous thunderstorms that occurred in that region during the current month, and which seems worthy of record as illustrating one extreme feature of our climate:

The month of July was remarkable for the number of thunderstorms, excessive rainfall, high temperature, and damage caused by lightning.

The station is in a valley surrounded by hills from 400 to 600 feet high. It is 1,598 feet above sea level, in latitude 42° 20′ N., longitude 78° 29′ W. The valley is about 1¼ miles wide (in fact an old lake bed) 30 miles long, and extends northeast by southwest. An elevated plateau, about 500 feet high, lies southwest. The prevailing winds are southwest. The thunderstorms occurred as in the following table:

Date.	Time of beginning.	Time of ending.	Rainfall.	Direction of wind.	Max. temperature.	Remarks.
2	11:00 a.m.	2:00 p.m.	.14	nw.	81	
4	4:00 p.m.	5:00 p.m.	.04	s.	96	Highest temperature on record here.
5	2:00 p.m.	1:00 a.m.	1.21	s. veered to nw.	94	Three people injured, 1 killed; house wrecked by same flash of lightning at 5 p. m.
10	6:30 p.m.	6:30 p.m.	.00	s.	93	Distant thunder in northeast.
11	3:00 p.m.	10:00 a.m.	2.00	sw. veered to n.	88	Tornado and hail.
13	7:00 p.m.	7:00 p.m.	T.	s.	78	Distant thunder in west.
14	8:00 p.m.	4:30 p.m.	.26	w.	72	Distant thunder at 2 p. m., west.
18	7:00 a.m.	.....	.01	s.	83	Thunder at 3 p. m.
19	2:00 p.m.	3:20 p.m.	.76	s.	82	.51 inch rain fell in 12 minutes.
20	9:00 a.m.	3:00 p.m.	.21	s.	81	Hail.
22	During	night	.14	se.	84	Thunder at 5 p. m.
23	2:00 a.m.	4:00 p.m.	.32	w.	73	Thunder at 2 p. m.
26	Rained	3 days....	.....	s.	80	Thunderstorm at 6 p. m.
30	5:45 p.m.	6:45 p.m.	T.	w.	81	
31	10:00 p.m.	10:00 p.m.	.00	w.	75	

Of the fifteen thunderstorms that of the 5th was remarkable. It appeared to form in the hills to the southwest. Enormous masses of black clouds formed, thunder rolled without cessation and shook the hills. Streams of lightning played along the crests of the hills for miles. At 5 p. m. a flash extended across the southwest horizon more than 90°. This flash of lightning injured 3 persons at Ischua, 6 miles distant; killed a child at Sugartown, 6 miles distant; and wrecked a dwelling at Ashford, 10 miles away. These three places are in a line extending across the elevated plateau.

On the 11th another thunderstorm formed in the hills west of the station, and at 3 p. m. came through "the narrows" (an opening in the hills half a mile west of the station), where it developed into a tornado. Here a strong southwest wind caught the storm and swept it up the west side of the valley in plain view. The loud roar was plainly heard as the wind swept along the hillsides. Lightning fired a barn, burned another, knocked a chimney off a house, and shivered trees. The wind uprooted trees in its course, and changing to north, drove the storm down the valley again. At 2 p. m. on the 19th a dark